CLAIMS

1. A scroll compressor comprising:

a compression section provided in a closed container, said compression section including

an orbiting scroll having volute teeth formed substantially symmetrically on both surfaces of an orbiting base plate, and a main shaft being penetrated through and fixed at a center portion of said orbiting scroll and

a pair of fixed scrolls opposed to said both surfaces of said orbiting scroll, each of said fixed scrolls having a volute tooth corresponding to each of said volute teeth of said orbiting scroll to respectively form compression chambers;

a motor provided in said closed container for driving said main shaft;

a suction pipe provided to said closed container for introducing a suction gas into said closed container and for causing said suction gas to be sucked into said compression section after cooling said motor; and

a discharge pipe provided to said closed container for discharging said suction gas compressed by said compression section.

2. The scroll compressor according to claim 1, wherein

said closed container is vertically disposed,

said compression section is disposed at a lower portion in said closed container,

said motor is disposed at an upper portion in said closed container,

a lubricating oil storage chamber is formed in said closed container below said compression section, and

an oil feed pump for sucking up lubricating oil from said lubricating oil storage chamber is disposed at a lower end of said main shaft.

3. The scroll compressor according to claim 2, wherein

said closed container is partitioned by said compression section into a motor housing part and the lubricating oil storage chamber,

said suction pipe is provided at said motor hosing part,

said discharge pipe is provided at said compression section, and

an oil feed path is formed, said oil feed path communicating from said oil feed pump, running through inside of said main shaft, opening at a main shaft bearing of said upper fixed scroll, passing through a main shaft bearing of said orbiting scroll, passing through a main shaft bearing of said lower fixed scroll and reaching said lubricating oil storage chamber.

4. The scroll compressor according to claim 3, wherein

a passage is provided in said compression section for communicating between said motor housing part and said lubricating oil storage chamber, and

a check valve, for preventing backflow of said lubricating oil, is provided at an opening of said passage at said lubricating oil storage chamber.

5. The scroll compressor according to claim 3, wherein a suction port, for communicating between said motor housing part and said compression chamber, is provided at an outer peripheral portion of said upper fixed scroll of said compression section.

6. The scroll compressor according to any one of claims 1 to 5, wherein said suction pipe is provided to said closed container in a vicinity of said compression section, and a glass terminal is provided at an upper end portion of said closed container.

7. The scroll compressor according to any one of claims 1 to 6, wherein seal means is provided at said orbiting scroll for sealing compression chambers formed between said orbiting scroll and said fixed scrolls from an orbiting bearing provided at a main shaft side of said orbiting scroll and main shaft bearings provided between said fixed scrolls and said main shaft.

8. The scroll compressor according to claim 7, wherein said seal means is provided at a core part of said orbiting scroll at surfaces thereof facing to said fixed scrolls.

9. A scroll compressor comprising:

a compression section provided in a closed container, said compression section including

an orbiting scroll having volute teeth formed substantially symmetrically on both surfaces of an orbiting base plate, and a main shaft being penetrated through and fixed at a center portion of said orbiting scroll and

a pair of fixed scrolls opposed to said both surfaces of said orbiting scroll, each of said fixed scroll having volute tooth corresponding to each of said volute teeth of said orbiting scroll to respectively form compression chambers; and

a motor provided in said closed container for driving said main shaft,

wherein each of said orbiting scrolls and fixed scrolls has more than two turns of volute tooth formed toward the periphery of said main shaft.

10. The scroll compressor according to any one of claims 1 to 9, wherein said orbiting scroll is composed of a core part and an volute part, wherein said core part has a orbiting bearing in a center portion thereof and is formed in a curved shape such as an arc, and said volute part is formed at periphery of said core part and has a continuous volute teeth formed in a volute curve in substantially the same height as said core part.

11. The scroll compressor according to claim 10, wherein said fixed scroll has a recess in a center portion and an volute tooth formed on the outer periphery of said recess, said recess accommodating said core part of said orbiting scroll, said volute tooth, being in the same size as said volute tooth of said orbiting scroll formed in an volute curve, being rotated 180 degrees in phase

12. The scroll compressor according to any one of claims 1 to 11, wherein said scroll compressor uses a suction gas for performing low compression ratio operation.

13. The scroll compressor according to any one of claims 1 to 12, wherein said suction gas is a CO_2 gas.

14. The scroll compressor according to any one of claims 10 to 13, wherein said core part of said orbiting scroll is formed in a shape to make a top clearance volume at minimum.

15. The scroll compressor according to any one of claims 10 to 14, wherein a pair of said compression chambers are formed by combination of said orbiting scroll and said fixed scroll, and a relief portion, for causing said pair of compression chambers to communicate with each other in a final compression step to be shifted to a discharge step, is provided in said core part of said orbiting scroll.

16. The scroll compressor according to claim 7 or 8, wherein a discharge port of a compressed gas is provided in a center portion of said fixed scroll at a spot which is not across said seal means.

17. The scroll compressor according to claim 16, wherein said discharge port is provided at only one of the fixed scrolls, and a communication port is provided penetrating through the orbiting base plate in the vicinity of said core part of said orbiting scroll and

outside said seal means, and said communication port is not across said compression chamber and always communicates with said discharge port.

18. The scroll compressor according to claim 16 or 17, wherein said discharge port and communication port are formed respectively as a long hole or by a plurality of holes adjacent to each other.